

**WHAT IS CLAIMED IS:**

1. A mold for the manufacture of an electrophoresis cassette, said mold comprising a body having a cassette molding part formed on one face thereof, said cassette molding part being surrounded by a peripheral sheet engaging portion extending in a plane located at a different elevation than said cassette molding part to provide for substantially uniform stretching of the sheet on the cassette molding part.
2. The mold of claim 1, further comprising:
  - a vacuum outlet provided on the body; and
  - a plurality of vacuum apertures defined in said body.
3. The mold of claim 1, further comprising:
  - a cooling inlet provided on the body; and
  - a cooling outlet provided on the body.
4. The mold of claim 1, wherein said at least one cassette mold is a male cassette mold and wherein said peripheral sheet engaging portion is a groove provided in said body.
5. The mold of claim 1, wherein said at least one cassette mold is a female cassette mold and wherein said peripheral sheet engaging portion is a shoulder provided in said body.
6. The mold of claim 1, wherein said at least one cassette mold comprises at least two relatively symmetrical stretching members provided at the upper and lower extremities of said cassette mold for stretching said material.
7. The mold of claim 2, wherein said vacuum outlet is secured on one side of the mold.
8. The mold of claim 3, wherein said cooling inlet is secured on one side of the mold.
9. The mold of claim 3, wherein said cooling outlet is secured on one side of the mold.

10. A thermoforming mold for manufacturing an electrophoresis cassette, the mold comprising:

a body having a cassette molding part formed on one face thereof, said cassette molding part being surrounded by a peripheral sheet engaging portion extending in a plane located at a different elevation than said cassette molding part to provide for substantially uniform stretching of the heated sheet on the cassette molding part.

11. The thermoforming mold of claim 10, further comprises a plurality of vacuum holes defined in said body to provide assistance in holding the heated sheet in a flat state on said body, and a vacuum port for allowing said body to be connected to a vacuum source.

12. A molding method for the manufacture of an electrophoresis cassette comprising the steps of:

a) heating a thermoforming material applied on a thermoforming mold suitable for the manufacture of an electrophoresis cassette;

b) applying a pressure on said material to closely maintain the material on said mold;

c) stretching said material to obtain an uniformly distributed material surface;

d) cooling said material to form a molded material surface with cooling parameters adapted to provide an uniformly distributed material surface; and

e) providing holes in a peripheral portion of the electrophoresis cassette facing a peripheral portion comprising reservoirs entries.

13. The molding method of claim 12, wherein said mold is comprising a frame having a groove provided in one face thereof and having a groove rear surface, said groove being of dimensions sufficient to have at least one cassette mold provided therein while keeping a space between an outline of the at least one cassette mold and an inside border

of the groove to permit stretching of a sheet material in a uniform molded material surface.

14. The molding method of claim 12, wherein heating said thermoforming material is performed before applying said material on the mold.

15. The molding method of claim 12, wherein said mold further comprises a vacuum outlet provided on the frame and a plurality of vacuum apertures defined in said frame, and wherein the step of applying pressure is performed by at least in part drawing air through said vacuum apertures so as to create a negative pressure between said cassette mold and the sheet material.

16. The molding method of claim 12, wherein said mold is divided in a plurality of zones and wherein said heating is performed at different temperature and/or during heating time periods for said zones.

17. The molding method of claim 12, wherein said heating is performed by radiating heat from said mold.

18. The molding method of claim 12, wherein said cooling step is performed by passing a cooling fluid through cooling channels provided in said mold.

19. The molding method of claim 12, wherein said cooling step comprises the pre-cooling of said fluid passing through cooling channels provided in said mold.

20. The molding method of claim 12, wherein said mold is divided in a plurality of zones and wherein said cooling is performed at different speed for each zone.

21. The molding method of claim 12, wherein a minimal amount of the material is left around the mold for minimizing heat propagation from left material to molded material.

22. The molding method of claim 12, wherein said holes are punched in said cassette to minimize mechanical tensions created in said cassette.

23. A method for filling an electrophoresis medium into an electrophoresis cassette comprising the steps of:

- a) sealing at least one aperture of said cassette;
- b) injecting the electrophoresis medium into said cassette;
- c) applying a pressure onto said cassette in order to generate a electrophoresis separation area shaped in said electrophoresis medium in a form adapted to electrophoresis.

24. The method of claim 23, wherein said injecting is performed by injecting the electrophoresis through an aperture in a comb inserted in said cassette.

25. The method of claim 23, further comprising the step of inserting a comb into said cassette to form well cavity after step b)

26. A comb for an electrophoresis cassette adapted to be removably inserted into said cassette comprising at least one tooth having protrusion provided thereto for preventing the electrophoresis medium gel attachment to said comb.

27. The comb of claim 26, further allowing injection therein of an electrophoresis medium and comprising at least one inlet for injection of the electrophoresis medium.

28. The comb of claim 26, wherein said at least one tooth is made of hard plastic or polymer.

29. The comb of claim 26, wherein said at least one protrusion is made of a material selected from the group consisting of rubber, urethane silicone, Chemraz, Viton, Buna-N, Aegis, Kalrez, Teflon, EPDM, Aflas, Neoprene, Fluorosilicone, Polyurethane and Mil-spec.

30. A comb for an electrophoresis cassette adapted to be removably inserted into said cassette comprising at least one tooth having protrusion provided thereto for preventing acrylamide polymerization surrounding said comb.

31. The comb of claim 30, further allowing injection therein of an electrophoresis medium and comprising at least one inlet for injection of the electrophoresis medium.

32. The comb of claim 30, wherein said at least one tooth is made of hard plastic or polymer.

33. The comb of claim 30, wherein said at least one protrusion is made of a material inhibiting acrylamide polymerization.

34. The comb of claim 30, wherein said at least one protrusion is made of a material selected from the group consisting of rubber, urethane silicone, Chemraz, Viton, Buna-N, Aegis, Kalrez, Teflon, EPDM, Aflas, Neoprene, Fluorosilicone, Polyurethane and Mil-spec.